Biochemical Analysis of Fish Seeds With Reference to Physico-Chemical Parameters of Water from Nanded District.

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INTRODUCTION

Blue revolution the Neel Kranti Mission has the vision to achieve economic prosperity of country and fishers and fish farmers as well as contribute towards food and nutritional security through full potential utilization in a sustainable manner, keeping in view the bio-security and 0environmental concerns.India has rich and diverse fisheries resources ranging from deep seas to lakes, ponds, rivers and more than 10% of global biodiversity in terms of fish. As result India is the 3rd largest producer of fish and 2nd largest producer of fresh water fish in world (FAO 2006), wich shows the world's demand for aquatic sources of food is on rise not only because of its growing population, but also because of a preference for healthier foods for human beings. (Abimorad and Carneiro, 2007).

Increasing population result in demand of food which results in starvation and malnutrition of children.Although in past 3 decades, the food production has increased at a greater rate than the population but this fact holds true only for developed nations.But now-a-days along with food security, nutritional security is also important because food security for everyone can only be achieved by enhancing global food production in terms of proteins. This will also help to overcome the problem of protein malnutrition and fish has considered as good source of nutritional security.

Fishing in India includes freshwater fishing and marine water fishing. Fish not only considered as source of food but also contribute to meet requirements of basic nutrition and also plays role in fulfilling vitamin and mineral deficiencies. So it has become important to enhance the aquaculture rate and it can be achieved with availability of good quality of fish seed.But to achieve our goal we have to take many parameters in consideration like water, soil, feed, seeds etc. Availability of good quality of seed can result in favourable production of fish farming but along with good quality of seed. Water is also an important factor which directly affects the fish growth, development, its maturity time, reproduction proess and many more things. So in this research we are going to study how water is going to affect the fish growth. Because without water fish farming cannot be done but it is also true that every species of fish require different type of water medium. As water also shows different temperature level, different pH, acidity and many more biological, chemical parameters which plays role in growth of fish quality of water and quantity of water describe how healthy fish will grow.

Due to an ever-increasing awareness about healthy foods, fish is finding more acceptances because of its special nutritional qualities. As healthy fish, with good amount nutritional value has become demand of population. Nutritional value of fish can be described by its analysis as fish is good source of carbohydrates, proteins, vitamins, lipids. So this research will helpful to determine how different parameters of water affect the growth of fish ie nutritional value of fish. The nutritive value of product depends mainly on quality and quantity of organic substances like proteins, fats, vitamins, carbohydrates and mineral present. These also referred as a biochemical constitution of fish, so indirectly research will shows how different parameters of water affect biochemical composition of fish.

REVIEW OF LITERATURE

Fishes are the best source of animal protein with high digesting capacity. In general the good quality of fish indicates biochemical composition of fish body. The quality of fish refers to appearance and freshness or degree of spoilage so it shows quality refers to different things to different people.Therefore to get knowledge of biochemical composition of fish many reserachers have worked in different time period.

There are many researchers who have work on fishes with different aspect of biochemical composition with different parameters. But notable work is done by Atwater (1888) his work covered almost 53 species food fishes of America.

Clark & Almy (1918) studied on large no. of fishes at Atlantic Coast and observed that the variation in biochemical composition of fishes according to changing season. Now this field becomes more suitable to know the best fish for fish farming, due to different works presented by various researches.Pearse (1625) studied on two commom fresh water fishes, to know the variation in composition. He observed that according to different ages, seasons and it shows changes in composition during development and adult life.Love and Wood (1937)perform work on fat metabolism of Herring. He is also regarded as father of fish biochemistry as he have revealed the chemistry of fish.

Jafri and Quasim (1965) studiedon biochemical composition of some species of fishes and reported that the murrels possesses high amount of fat compared to carps.Kalpna et.al., (1978), have studied muscles of freshwater catfishes to analyze biochemical composition. De Silva and Rangoda (1979) reported difference between chemical composition of fresh and salt dried product of *Tilppiamossambica.* Ali et.al., (2001) studied onbiochemical composition of *Channa punctatus* and reported that protein content variation in healthy fishes.

Islalm and Razzaq (2005) show seasonal variation in biochemical composition of freshwater Gobi *Glassogobiusgiuris* from Padma River. They suggest that composition of fish changes according to season, sex and reproductive cycle. Kamal et.al.,(2007) wprkingon biochemical composition and small indigenous fresh water fishes from Mouri river Khulna, Bangladesh. Breck (2014) reported that the moisture content in fish in directly related to protein and fat contents.

Ozden and Erkan (2008)have done comparative study on composition of cultured fish species, as they are good sources of protein, fat, mineral for human beings.Ashraf et.al., (2011)studied onwild Silver carps and they stated that the nutritional difference due to changes in habitat. Boran and Karacam also studied seasonal changes in proximate composition of some fish species from a black sea.

Baura et.al., (2012) studied biochemical composition of some commercial marine fish species. Siddique *et.al*., also studied available marine dry fishes to determine proximate composition. Their study revealed that marine dry fishes have very good nutritional value.

OBJECTIVES OF RESEARCH/ PROPOSED HYPOTHESIS

- To study different life stages of fish.(Seed, Fry, Fringlings and Adults)
- To study the biochemical compopsition of selected species for study.
- To understand nutritional value of fish species.
- The comparative study will also suggest which species of fish is more profitable or suitable for growth.
- It will help to revise fish importants in human life along with important of water fish life.
- To study physico-chemical parameters in relation to bio-chemical composition of fishes.
- The study will provide realiable information about nutrient content of fish species.
- The research will show the major and minor chemical constituent in fish species.
- The information about local food fishes to distinguish their nutritional value and make a choice based on that information from consumer point of view.

METHODOLOGY TO BE ADOPTED

STUDY AREA

Fish farms are selected from Nanded district namely, - Karadkhed dam, Manar dam Bhategaon dam.

Karadkhed dam – is an earthfill dam on local river, near Degloor taluka. It is 93 KM away from Nanded district headquarters. It is constructed in year 1978 for irrigation purpose where fish farming is also observed. The storage capacity of Dam is 12,000.00$KM^{3.}$

Manar Dam – is medium size reservoir located on Manar river at villageWarantnear Barul, Taluka Kandhar, District a Nanded. It is constructed in 1968. Total capacity is 128,700KM^3. The dam is constructed for the purpose of small scale fishing.

Bhategaon Dam– is constructed in year 1965 in Hingoli district for irrigation purpose, under Tahsil of Kalamnuri. It is situated 419.10 meters above sea level. The surface water level is 420.62meters and depth level is 412.85 meters.

ANALYSIS OF PHYSICO -CHEMICAL PARAMETERS –

Physical parameters: Atmospheric temperature, Temperature, Turbidity, Transparency etc.

Chemical parameters: Ph, Dissolved oxygen, CO_2, Total hardness, Calcium hardness, Magnesium hardness, TDS (Total dissolved solid), Nitrate, Phosphate etc. All the Physico-chemical parameters will be studied standard method suggested by APHA and IAAB.

ANALYSIS OF BIOCHEMICAL COMPONENT :). Biochemical papramete‌s are Protien, Glycogen, Lipid and Ash selected for the study and determination of biochemical analysis use standard methods suggested by Lowery method (Lowery,*et.al* 1951) to determine the protein content, Glycogen estimation was done by Anthrone reagent (Seifer,*et.al.* 1950). Lipid estimation was done by chloroform methanol method suggested by (Ramnik Sood, 2006 and Bling and Dyer (1959)

IMPORTANCE OF STUDY

INTERNATIONAL STATUS –

Fishing is one of oldest occupation of man. Egyptians were the 1st to start fish culture, somewhere in 2500 B.C., followed by China 2000 B.C. fish culture in tanks had its beginning in India since 350 B.C. fish production report 2021-22 and now India has become 3rd largest producer of fish and 2nd largest producer of fresh water fish in world.Initially fish production relied heavily on capturing wild fish, however majority of captured fish were used for industrial applications and not as a food source. But now-a-days fish has been widely used as an excellent source of animal protein and other nutrients. In this way fish become important diet of human beings and have discussed importance of fish in human life in many researcherGarling & Wilson (1977) Studied on catfish fingerlings and reported that thecarbohydrates are stored as glycogen, that can be mobilize to satisfy energy demands and also explain how growth rate of catfish fingerlings is affected by different parameter.

Stancy (1985) hestudied fishes and his reports shows some fish has high amount of PUFA (polyunsaturated fatty acid in fish flesh and fish oil and it is beneficial in reducing serum cholesterol Stickney &Hardy (1989)reported that despite the fact that fish protein is one of most important nutrient for human health, fish nucleus also have a good source of n-3PUFA, that are considered to be most important in human nutrition, due to their therapeutic role in reducing certain cardiovascular disorders.Ackman, R.G. et.al., (1986) fishesare also rich source of omega-3 fatty acids.Salma E I, O Gizani *et.al.,*Shaji, S.A. *et.al*., Womeni H.M. *et.al*., Toppe, J. *et.al*., (2015) reported that fish proteins have biological values, because they are characterized by the presence of essential amino acids in good proportion.Duran A *et.al.,*(2010) reported that the fish also contain mineral, which helps a lot in human body function, because they maintain acid-base balance and help haemoglobin formation. De Silva and Rangoda (1979) reported difference between chemical composition of fresh and salt dried product of *Tilapia mossambica.*Clark & Almy (1918), analyzed large no. of fishes at Atlantic coast. They worked on biochemical composition of fishes and found out that fishes shows variation according season change. According of FAO.fisheries'- India is a very important economic activity and a flourishing sector with varied resources of potentials. After Indian Independence, fisheries with agriculture been recognized as an important sector.

National Status –

Maharashtra has become major supplier of fish in country. In which major contribution is done by marine fish production in India. The fish potential of state is estimated at 6.0 lakh tonnes (fish production report 2021-22). In Maharashtra there is a group of population, who use fishing as their way to survive. Some people use fish as their main food.Due to an ever increasing awareness about health foods fish is finding more accptances because of its special nutritional qualities. So Government has become active in fishing business, because fishing not only helps in maintaining economy but also helps to overcome many situations like malnutrition, human diseases, starvation problem.

So now beyond food security, nutritional security also has become important and thislead towards fish important at nutritional level to explain this many research, project, survey has performed to create awareness in local peoples mind.

Ashutosh Dash and Yashaswi Nayak (2020),studied muscle of marine fish- status that, Human body needs nutrient to perform function and maintain healthy body and fish is source of such things. Kalpana *et.al.,* (1978) have studied muscle of freshwater fishes, catfishes to analyse its biochemical constituent.Agusa (2007) observed that the Fish is source of animal protein and has widely accepted as a good source of protein and other elements for maintenance of healthy body. Moghaddam *et.al*., (2007) reported the chemical composition is traditionally used as indicator of nutritional value of fish and physiological condition of fish. Zafar *et.al*., (2004) they concluded biochemical analysis provide information on nutritional value of fish, used as a source of food. K.VijayaLakshmi (2018) studied onbiochemical composition in liver and muscle of johniusaenus species.Sujatha *et.al.,* (2013) explain protein concentration is more in fish during early summer. Fish provides 30% of people in developing country. FAO (2020) approximately 16% of animal protein consumed by world's population are derived from fishes and over 1 billion people depend on fish as their main source of animal protein.

Therefore searching precise information about this biochemical constitutent of fish has became necessary for formulation of animal feed, fish industry, human health, nutrionist, pharmaceuticals, chemicals etc.

Significance/ Scope of study –

Actually fishery sector play multiple roles in Human life ie fish farming/ fish production affects the economy of India, indirectly but also shows direct effect on human life, because now-a-days consumption of fish has increased due to which fish has become major diet of humans.

Fishes are highly nutritive in chemical nature a healthy fish has its own demand because it have high amount of protein vitamins, lipids, fats etc. So to raise its nutritional level it has become necessary to do. A biochemical analysis of fishes at its different stages according to their water parameters because water plays a major role in fish farming and it directly affects the fish growth, development.So recognizing potential of fishes in human life, it has become important to attract peoples attention towards its enhancement and proper management of water body.

The study is conducted in Nanded district of Marathwada region. The Nanded district is endoved with several small, medium reservoirs along with Godavari river, which shows high potential in fish production. The study will help to overcome the problems of ideal water body for fish development. This study also helpful in making proper analysis /data/ information for future researchers.

Work Plan –

1st year

- Completion of course work
- Collection of data, reference work, review of literature
- To visit different water bodies, which are available in Nanded district

- To visit different fish farms or local fish market for fish seed sample.

2nd year

- Randomly 3 different fish farms are selected for water sample.
- Then fishes also selected by random selection method (Indian major carp/ local food fishes)
- The selected fish species will be studied at level of seed, fry, fingerling and adult for analysis.
- Identification and morphological stages of life cycle of fish is studied.

3rd Year

- Biochemical component wereanalysed by standard estimation methods.
- Physico-chemical parameters were studied in relation to fish stages.
- Data is collected, analysed and arranged in tabular form.
- All statistical calaulation is done.
- Thesis writing and submission process will be completed.

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